

LAWN AND GARDEN SPRAYER

Technical Field and Background of the Invention

[0001] This application claims the benefit of Provisional Application number 60/422,698 filed on October 31, 2002.

[0002] The present invention relates to a lawn sprayer system designed for homeowners, landscapers, and lawn-care professionals for the application of liquid organic fertilizers and soil amendments on small to medium sized yards and business landscapes.

[0003] Within the Lawn and Garden Industry there is a paradigm shift taking place away from a Nitrogen-Phosphate-Potash "NPK" focus to a more safe, non-toxic, and sustainable home/backyard ecosystem. In response to this shift, the primary source of information and development is coming from the agriculture industry where a century of chemical use by farmers has eroded the depth and quality of fertile soil worldwide. Many companies and like minded individuals have developed products for the agriculture industry intent on improving the natural biology of the soil. This has led to increased crop yields and a reduction in the need for fertilizers of all types, along with developing a deeper "living" soil base allowing for larger and deeper root growth which in turn reduces the need for valuable water resources.

[0004] Product development of organic fertilizers and amendments for the homeowner market have primarily come from agriculture which relies heavily on water soluble products delivered to the ground and plants by tractors pulling large sprayer tanks. While the small farmer and large homeowner have access to downsized tractors and sprayers, these implements are still too large and cumbersome for most small to medium sized yards.

[0005] Currently there is no system available to fit the needs of homeowners with homesites falling in the range of 1/4 to 1/2 acres. Available implements are either too large or too small to be of practical use. On the large end there are several sprayers which are designed to be pulled behind a small lawn tractor. The need to pull is an issue of size and weight. The smallest sprayer system available through regular retail channels is 15 gallons. The total weight of this system fully loaded is over 150 pounds which would prove extremely difficult to maneuver in thick turf without the aid of a tractor. At the other end of the spectrum is the 2 gallon backpack sprayer which is impracticable for lawn coverage due to an incomplete uniform coverage provided by a backpack sprayer.

[0006] The lawn and garden sprayer according to the invention answers the general problems found in the marketplace and uniquely packages technology to build a homeowner friendly sprayer system. By combining the spraying capabilities for turf, tree, plant, and bed spraying into a push-type platform that can be easily used and maintained by men and women of all ages.

Summary of the Invention

[0007] Therefore, it is an object of the invention to provide a lawn and garden sprayer for small to medium sized yards.

[0008] It is another object of the invention to provide a lawn and garden sprayer that can be pushed by men and women of all ages.

[0009] It is another object of the invention to provide a lawn and garden sprayer that can be maneuvered in thick turf without the aid of a tractor.

[0010] It is another object of the invention to provide a lawn and garden sprayer that allows

for complete lawn coverage.

[0011] It is another object of the invention to provide a lawn and garden sprayer that can be used to spray directly on trees, shrubs, plants, and planting beds.

[0012] It is another object of the invention to provide a lawn and garden sprayer that can be easily maintained.

[0013] It is another object of the invention to provide a lawn and garden sprayer that utilizes an easily-maneuverable lawn mower-type chassis.

[0014] These and other objects of the present invention are achieved in the preferred embodiments disclosed below by providing a mobile lawn and garden sprayer including a chassis mounted on a plurality of rear wheels and having a push handle attached to the chassis for allowing a user to manually push the sprayer; a container carried by the chassis for containing a liquid for being sprayed; a power supply carried on the chassis for supplying power to a pump connected to the container for discharging the liquid from the container under pressure; and at least one spray head communicating with the container for discharging the liquid under pressure.

[0015] According to another preferred embodiment of the invention, the rear wheels are substantially larger than the front wheels to allow easy movement of the sprayer.

[0016] According to another preferred embodiment of the invention, the power supply is a battery and the suction/discharge device is a pump.

[0017] According to another preferred embodiment of the invention, the suction/discharge device is connected to the container by at least one hose.

[0018] According to another preferred embodiment of the invention, the first means for spraying a liquid comprises at least one spray nozzle.

[0019] According to another preferred embodiment of the invention, the spray nozzle is attached to the front end of the chassis and connected to the suction/discharge device by at least one hose.

[0020] According to another preferred embodiment of the invention, the second means for spraying a liquid comprises at least one spray wand.

[0021] According to another preferred embodiment of the invention, the spray wand is connected to said suction/discharge device by at least one hose.

[0022] According to another preferred embodiment of the invention, a lawn and garden sprayer including a chassis having an interior cavity mounted on a plurality of wheels and having a push handle attached to the chassis for allowing a user to manually push the sprayer; a container carried within the interior cavity for containing a liquid for being sprayed; a power supply carried within the interior cavity for supplying power to a pump connected to the container for discharging the liquid from the container under pressure; and at least one spray head communicating with the container for discharging the liquid under pressure.

[0023] According to another preferred embodiment of the invention, the container has a male strengthening ring for mating with the female strengthening ring of the chassis.

[0024] According to another preferred embodiment of the invention, the power supply is a battery and the suction/discharge device is a pump.

[0025] According to another preferred embodiment of the invention, the rear wheels are substantially larger than the front wheels to allow easy movement of the sprayer.

[0026] According to another preferred embodiment of the invention, the suction/discharge device is connected to the container by at least one hose.

[0027] According to another preferred embodiment of the invention, the first means for spraying a liquid comprises at least one spray nozzle.

[0028] According to another preferred embodiment of the invention, the spray nozzle is attached to the front end of the chassis and connected to the suction/discharge device by at least one hose.

[0029] According to another preferred embodiment of the invention, the second means for spraying a liquid comprises at least one spray wand.

[0030] According to another preferred embodiment of the invention, the spray wand is connected to the suction/discharge device by at least one hose.

[0031] According to another preferred embodiment of the invention, the lawn and garden sprayer further includes a back cover for covering the power supply and the suction/discharge device within the chassis.

[0032] According to another preferred embodiment of the invention, the back cover has a male strengthening ring for mating with the female strengthening ring of the chassis.

Brief Description of the Drawings

[0033] Some of the objects of the invention have been set forth above. Other objects and advantages of the invention will appear as the invention proceeds when taken in conjunction with the following drawings, in which:

[0034] Figure 1 is an environmental view of the lawn and garden sprayer.

[0035] Figure 2 is a perspective view of a first embodiment of the lawn and garden sprayer showing the sprayer from the side.

[0036] Figure 3 is a perspective view of a first embodiment of the lawn and garden sprayer

showing the sprayer from an angle.

[0037] Figure 4 is a perspective view of the pump, battery, and hoses of the lawn and garden sprayer.

[0038] Figure 5 is a perspective view of a second embodiment of the lawn and garden sprayer showing the sprayer from the side.

[0039] Figure 6A is a perspective view of a side view of a chassis of the second embodiment of the lawn and garden sprayer.

[0040] Figure 6B is a perspective view of an end view of a chassis of the second embodiment of the lawn and garden sprayer.

[0041] Figure 7A is a perspective view of a side view of a tank of the second embodiment of the lawn and garden sprayer.

[0042] Figure 7B is a perspective view of a top view of a tank of the second embodiment of the lawn and garden sprayer.

[0043] Figure 7C is a perspective view of a rear view of a tank of the second embodiment of the lawn and garden sprayer.

[0044] Figure 8 is a perspective view of a tank within a chassis along with a back cover of the second embodiment of the lawn and garden sprayer.

[0045] Figure 9 is a perspective view of the tank within the chassis with a back cover hinged on the chassis of the second embodiment of the lawn and garden sprayer.

Description of the Preferred Embodiment and Best Mode

[0046] Referring now specifically to the drawings, a mobile lawn and garden sprayer according to the first embodiment of the present invention is illustrated in Figures 1-4 and

shown generally at reference numeral 10. The lawn and garden sprayer 10 is designed for use with a lawn or garden, but may also spray a liquid on other types of surfaces. The lawn and garden sprayer 10 has a push bar 12 attached to the rear end of the chassis 11. The chassis 11 is supported by a pair of spaced-apart rear wheels 13 and 14 connected to a rear end of the chassis 11 and a pair of spaced-apart front wheels 16 and 17 connected to a front end of the chassis 11. The rear wheels 13 and 14 a larger diameter than the front wheels 16 and 17 to allow easy movement of the lawn and garden sprayer 10 through thick turf. The front wheels 16 and 17 are rigidly fixed to the chassis 11, however, other types of front wheels such as caster wheels can be used. The chassis supports a container 18, a pump 19, and a power supply 20 (hereinafter referred to as a battery). The container 18 contains a liquid for being sprayed under pressure, such as a water soluble fertilizer and preferably has a capacity of 8 gallans, but any suitably sized container could be used. The container 18 is easily removed from the chassis 11 for cleaning, substantially increasing the life of all components associated with the pump 19. The pump 19 is a diaphragm pump such as the 8000 Series Diaphragm Pump sold by SHURflo Pump Manufacturing Company, however, any suitable pump may be used. The battery 20 is a 12 volt battery such as the PS-12280 sold by Power Sonic, however, any suitable power supply may be used.

[0047] Referring specifically to Figure 4, a suction hose 21 is connected to the suction port 22 of the pump 19 and connects the pump 19 to the container 18 to allow the pump 19 to discharge liquid from the container 18 under pressure. A tee 23 is connected to the discharge port 24 of the pump 19 for allowing the liquid to flow to a wand 26 or a pair of nozzles 27 and 28. A pressure gage 29 is connected to the tee 23 to allow a user to check

the output pressure of the pump 19 to verify the pump 19 is working properly. A flexible wand hose 30 is connected at the end of the tee 23 and runs to the wand 26 for spraying trees, shrubs, and flowers. The wand hose 30 is preferably twenty feet in length, however, any suitable length could be used. A nozzle hose 31 runs from the center of the tee 23 to a splitter 32. The splitter 32 splits the flow of liquid to the two nozzles 27 and 28. The splitter 32 contains shut off valves 33 and 34 to control the flow of liquid to each of the nozzles 27 and 28. The nozzles 27 and 28 are mounted to the front of the chassis 11. The nozzles 27 and 28 are mounted to a plate 36 which is attached to the chassis 11 by a pair of outwardly extending arms 37 and 38 (See Figures 1-3). The nozzles 27 and 28 are preferably mounted to provide an outwardly projecting 24 inch overlapping spray, however, other nozzle spacing could be used to provide a larger or smaller overlapping spray. The flow of liquid to the nozzles 27 and 28 and the wand 26 is controlled by back pressure produced by the closing of valves. When the wand 26 is not in use, it produces a back pressure forcing the liquid to flow towards the nozzles 27 and 28. The amount of liquid flowing to the nozzles 27 and 28 is controlled by the shut off valves 33 and 34. To use the wand 26, the shut off valves 33 and 34 are completely shut off creating a back pressure and forcing the liquid to flow towards the wand 26.

[0048] Referring now to Figures 5-9, Figures 5-9 illustrate a mobile lawn and garden sprayer according to a second embodiment of the invention and is shown generally at reference numeral 40. The mobile lawn and garden sprayer 40 illustrated in Figures 5-9 performs and operates in the same manner as the lawn and garden sprayer 10 illustrated in Figures 1-4. However, the lawn and garden sprayer 40 is a sleeker, lighter weight, and more compact design.

[0049] Referring specifically to Figure 5, the lawn and garden sprayer 40 includes a uni-body chassis 41 which supports a container 42, a pump 43, and a power supply 44 (hereinafter referred to as a battery). The chassis 41 is supported by a pair of spaced-apart rear wheels 46 and 47 mounted to a rear end of the chassis 41 and a pair of spaced-apart front wheels 48 and 49 mounted to a front of the chassis 41. The rear wheels 46 and 47 have a larger diameter than the front wheels 48 and 49 to allow easy movement in thick turf. The front wheels 48 and 49 are rigidly fixed to the chassis 41, however, other types of front wheels such as caster wheels can be used. A push bar 50 is attached to the chassis 41 to allow easy movement of the lawn and garden sprayer 40. A spray head such as nozzles 51 and 52 are mounted to the front end of the chassis 41 providing an outwardly projecting 24 inch overlapping spray, and a wand 53 is mounted to the push bar 50 for spraying trees, shrubs, and flowers.

[0050] Referring specifically to Figures 6A and 6B, the chassis 41 has an interior cavity 54 defined by sides of the chassis 41 that form a continuous rim 56 along a top edge 57 of the chassis 41 for supporting the container 42, the pump 43, and the battery 44. A female strengthening ring 58 is formed in the top edge 57 for adding strength to the chassis 41.

[0051] Referring specifically to Figures 7A, 7B, and 7C, the container 42 has a fill cap 59 for filling the container 42 with a liquid such as a water soluble fertilizer, located on the top of the container 42. The top half 60 of the container 42 is larger than the bottom half 61 of the container 42, permitting the bottom half 61 to fit within the interior cavity 54 of the chassis 41 and providing a ledge 62 with a male strengthening ring 63 for adding strength to the container 42 and mating with the female strengthening ring 58 of the chassis 41. On the rear end of the container 42 located on the top half 60 a ledge 64 is formed, providing

an area where a back cover 66 can rest. The ledge 64 runs from the male strengthening ring 63 located at the bottom of the top half 60 of the container 42 up a left side 67 of the top half 60 across the top of the top half 60 and down a right side 68 of the top half 60 to the male strengthening ring 63.

[0052] Referring specifically to Figures 8 and 9, the container 42 nests within the rigid uni-body chassis 41. The male strengthening ring 63 of the container 42 mates with the female strengthening ring 58 of the chassis 41 providing a precise fit. A back cover 66 is used to cover the pump compartment 69 and the battery compartment 70. The back cover 66 has a male strengthening ring 71 along a bottom edge 72 of the back cover 66. The male strengthening ring 71 mates with the female strengthening ring 58 of the chassis 41 providing a precise fit. The back cover 66 also matches up with the ledge 64 along the rear end of the container 42 providing a flush and uniform fit. The back cover 66 is attached to the chassis 41 by a hinged connection 72 allowing easy access to the pump 43 and battery 44.

[0053] A lawn and garden sprayer has been described above. Various details of the invention may be changed without departing from its scope. Furthermore, the foregoing description of the preferred embodiment of the invention and the best mode of practicing the invention are provided for the purpose of illustration only and not for the purpose of limitation—the invention being defined by the claims.